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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,656	09/10/2003	Nagesh Siddabasappa Mavinahally		3690

7590  
Nagesh S. Mavinahally  
126 Shadow Creek Lane  
Anderson, SC 29621

11/12/2004

EXAMINER
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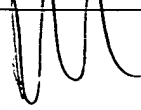
ESHETE, ZELALEM

ART UNIT	PAPER NUMBER
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3748

DATE MAILED: 11/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/659,656	Applicant(s) MAVINAHALLY ET AL. 	
	Examiner Zelalem Eshete	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2004.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5,8 and 23 is/are rejected.
- 7) ☒ Claim(s) 2-4,6,7,9-22 and 24-30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

This Office Action is in response to the amendment filed on 10/18/2004.

### ***Claim Objections***

1. Claim 8 is objected to because of the following informalities: The reference to "555" in line 5 is not understood. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1,5 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujikawa (4,736,717).

Fujikawa discloses a 4-stroke monoshaft multi-valve internal combustion engine comprising: a first cam follower assembly configured to operate an intake valve of the engine, a second cam follower assembly configured to operate an exhaust valve of the engine (see numerals 32,38;37a,37b); a cam follower channel assemblies comprising a base circle channel circumferentially cut in a crank web (not specifically numbered, however, shown collectively as various elements consistent with the specification; see

figure 6) attached to a crankshaft of the engine, a cam channel circumferentially cut substantially parallel to the base circle channel, a channel crossover cut to provide channel interconnectivity between the base circle channel and the cam channel (see figures 4,5), wherein when the first cam follower assembly is slideably engaged to the cam channel the intake valve is operated during a first-half rotation of the cam web, and wherein when the second cam follower assembly is slideably engaged to the cam channel the exhaust valve is operated during a second-half rotation of the crank web (see figures 5,6; column 4, lines 8 to 58).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujikawa in view of Aizawa et. al. (5,582,145).

Fujikawa discloses the claimed invention as recited above; and further discloses a cylinder block housing a cylinder bore, a piston reciprocally disposed within the cylinder bore and connected by means of connecting rod to a crank throw on a circular crank web of a crankshaft (see figure 5), the crankshaft being journaled for rotation about a crankshaft axis within a crank case chamber of a crank case affixed to a lower

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end of the cylinder block (see figures 1,5); a combustion chamber defined as a region within the cylinder bore between the piston and a cylinder head of the cylinder block and above intake and exhaust valves (see figure 5); a valve train chamber including a region within an engine housing extending between the cylinder head and the crank case, the valve train chamber housing an intake manifold and a mono-shaft valve operating system (see figure 5); the mono-shaft engine multi-valve operating system including an intake valve having an elongated stem (see numerals, 36,37); a bottom end of the stem mounted to a cam follower assembly (see figure 6).

Fujikawa fails to disclose the valve train chamber operatively interconnected with the crank case chamber through a charge passage in an internal wall separating the crank case chamber from the valve train chamber.

However, Aizawa teaches disclose the valve train chamber operatively interconnected with the crank case chamber through a charge passage in an internal wall separating the crank case chamber from the valve train chamber (see figure 1). Aizawa further teaches that such arrangement is useful to supply lubricating oil from the crank chamber to the valve mechanism (see column 4, lines 47 to 51).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Fujikawa's device by providing a charge passage as taught by Fujikawa in order to enhance the lubrication system of the valve mechanism as taught by Aizawa.

6. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujikawa in view of Konno (4,844,022).

Fujikawa discloses the claimed invention as recited above; and further discloses a cam channel assembly including intake and exhaust cam channels circumferentially cut in a crank web attached to a crank shaft of the engine, a crossover channel circumferentially cut into the crankweb and interconnecting the intake and exhaust cam channels (see figures 5,6); the intake and exhaust cam follower assemblies are slidably engaged to the intake and exhaust cam channels respectively (see figure 6).

Fujikawa fails to disclose the intake and exhaust cam channels have two different intake and exhaust cam profiles to provide disparate amounts of intake and exhaust valve openings and closures.

However, Konno teaches different cam profiles for intake and exhaust valves (see abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Fujikawa's device by providing different cam channels/profiles as taught by Konno in order to independently adjust the intake/exhaust valve openings based on the engine's requirement.

***Allowable Subject Matter***

7. Claims 2-4,6,7,9-22,24-30 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

8. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zelalem Eshete whose telephone number is (703) 306-4239. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (703) 308-2623. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Zelalem Eshete  
Examiner  
Art Unit 3748

Z

  
**THOMAS DENION**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 3700**